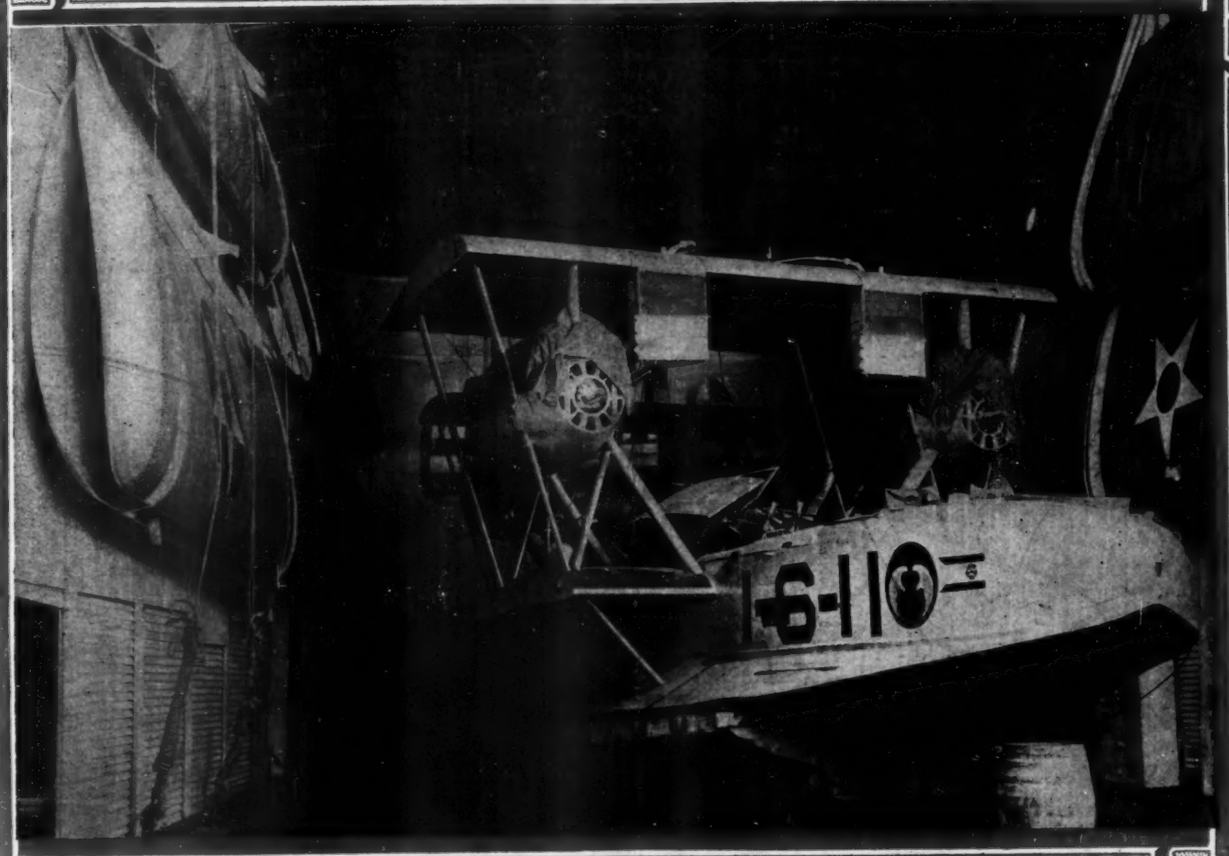
AVIATION

The Oldest American Aeronautical Magazine

FEBRUARY 16, 1925 Issued Weekly PRICE 10 CENTS



On the way to Hawaii—PN7 (Wright Tornado) scouting plane in the hold of U.S.S. Wright

VOLUME XVIII

NUMBER 7

SPECIAL FEATURES

THE NEW WRIGHT CYCLONE ENGINE

$22,000,000 MORE FOR AIRCRAFT CARRIERS

CALENDAR OF THIS YEAR'S NATIONAL AIR RACES

DESCRIPTION OF SIKORSKY TWIN-ENGINED TRANSPORT

GARDNER PUBLISHING CO., Inc.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

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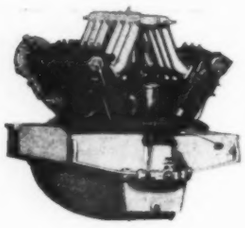
Ten Years of Packard Pioneering

1915-1925

in Aircraft Motor Development

No. 1 in a series on Aviation History

1915-16

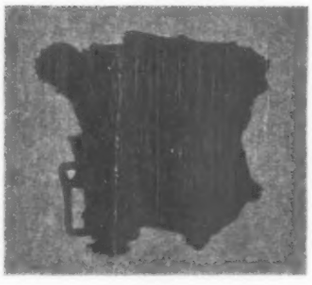


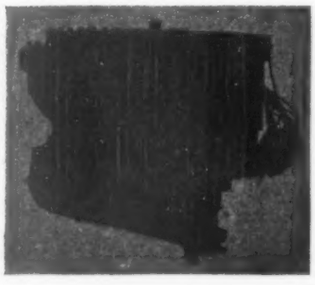
Packard Model 1

1917-18

1918-25

Packard Model 2





PACKARD'S pioneering in aircraft motor development dates back to the spring of 1915, when work on an airplane motor for war purposes was given precedence over all else in the great Packard factory.

To forget, as time passes, the part a mere corporation played in such a development, is a human weakness. It is more natural, perhaps, to be oblivious of the post-war progress made by the same corporation in its service to aviation.

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DETROIT, MICHIGAN

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FEBRUARY 16, 1925

AVIATION

VOL. XVIII. NO. 7

Published every Monday

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January 5, 1925.

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Metal Propeller Department,
Garden City,
L.I., N.Y.

Attention: Mr. C. B. Jones.

Gentlemen -

As one of the civilian aviation companies using the Curtiss-Reed Metal Propeller, we felt that you might be interested to have a report on how this propeller is working out for us.

Last September we purchased from you for our Canadian Company - Fairchild Aerial Surveys Company (of Canada) Ltd. - one of these propellers for use on our Huff Daland machines. The requirements for a propeller in this work are rather severe inasmuch as this machine is operated as a seaplane all summer, subjecting the propeller to the usual spray conditions encountered with seaplanes, and as a land plane flying with wheels or skiis in the winter time. During much of the summer season the machine is away from its base and, therefore, moored out in the open without protection. Furthermore, in Quebec the temperature differences between winter and summer are very severe.

It was only after very careful flight tests made by the writer personally that the order was placed with you for this Curtiss-Reed Propeller, and we are very pleased indeed to inform you that the results obtained with it have exceeded the guaranteed performance. A great improvement has been effected in the climb of the machine when carrying the heavy loads which are used in Canada, and whereas the wooden propeller formerly used caused excessive vibration in the machine, the Curtiss-Reed Metal Propeller has been found to be remarkably smooth. The results have been so good that our Canadian Pilot, Mr. Kenneth F. Saunders, describes them as wonderful.

After over three months' trial, we are thoroughly convinced that the Curtiss-Reed Duralumin Propeller is the best obtainable on account of its qualities of considerably increased performance, safety, durability, and freedom from deterioration due to climatic and other conditions.

We are so well pleased with the results obtained that we are placing with you an order for one more of these propellers to be used on our Huff Daland machine which we are flying here.

Yours very truly,

Richard H. Depew Jr

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VOL. XVIII | FEBRUARY 16, 1925 | No. 7

Our Lack of Air Transport

A TERSE and striking analysis of the factors which retard American civil aviation is contained in a study on this subject made by P. E. D. Nagle, transportation expert of the Department of Commerce. He writes:

"American progress in aeronautics has been retarded by a number of very serious obstacles. First, American operating costs are higher than those of any other large country; second, the United States has no Government agency specifically authorized to aid in the development of civil air navigation, nor to regulate it; third, no financial aid is given to the industry or any operating company by the Government; lastly, there has been in the past a lack of interest on the part of the American public. This last difficulty is, to a considerable extent, a result of the first three; but there are indications of a great change in the last few months, which has given an impetus to plans for developing American civil aeronautics that is bound to produce some permanent results. The extent of our own country, its physical characteristics, and its intimate contact with Canada, Mexico, and the West Indies are such as to make air services highly desirable. The success of the transcontinental air mail operated by the Post Office Department and the general approval which has greeted its operation indicate that in the United States is the question demanding immediate solution, particularly since there exist no such political, financial, and legal obstacles as have created difficulties for foreign countries.

"The last hundred years has seen the birth of nearly every means of transportation and communications worthy of consideration from the standpoint of efficiency. Practically every one of them has gone through a period of slow growth, and has suffered the latest advance in communications, remained for nearly 20 years a tool whose practical application was limited to military uses and to ships at sea. So it is quite in the nature of things that civil aviation should have to struggle through a similar period. That the period is rapidly coming to a close seems certain, however, and there is every reason to hope that before the end of the present year civil aviation in the United States will have taken a long step forward toward a position of permanent security."

Patronize Permanent Supply Firms

COMPETITION is the stimulus which keeps business in a healthy condition, but even in these days people realize that too much stimulus is bad for the constitution. In the older and more firmly established trades certain firms have gradually worked up to a position of eminence where their reputation for reliability and service is such that they keep their clients in spite of price cutting by new concerns. The people who buy from these old firms realize that in the long run they get a better quality of material and service by patronizing the companies which have been in existence for a long time and which probably will remain in existence after the price cutting firms are out of business.

Commercial aviation in this country is a very new business and due to the sale of surplus war material at real bargain prices a large number of dealers have been lured into the field. A few of these men were really interested in the future of aviation, but many others, deceived by the cheapness of the material, merely expected to make a quick turnover. The cheapness of the material as sold by the Government is undoubted, but the possibilities of resale depend on demand, and the demand was not as great as the supply. As a result many of the dealers found themselves forced to sell again at prices which yielded little or no profit. Most of those who only were interested in quick profits have gone out of business, but their competition has been very hard on the old aircraft equipment firms which intend to stay permanently in the field. The fliers who purchased from these quick turnover dealers may have got slightly lower prices at the time, but in the long run they would have done better to have patronized those firms which have been in the aeronautical supply business for some time. The small commercial operators would have realized this sooner except that the war surplus material was fairly similar in quality and perhaps the actual sale price was the most important factor. At the present time, however, the war surplus material is running pretty low and varies considerably in quality. The aircraft supply dealer who intends to stay in business will supply a better quality of material than the man who is only after a quick sale at a small profit.

It is hoped that the aircraft operators will realize the value of patronizing the old and established firms which intend staying in the aircraft business. By doing this they may miss a bargain or two, but in the long run they will help building up supply houses which can really furnish them with everything they want. Every time an aviator buys material from a fly-by-night concern he is weakening the legitimate aircraft dealer and endangering his own future source of supply. Bearing this in mind the consumer of aircraft supplies should study the standing of the dealer from whom he purchases and try and encourage those dealers who he feels are worthy of his confidence.

President Coolidge's Interesting View

IN writing about our oil reserves, President Coolidge recently made a highly significant statement.

He wrote: "Developing aircraft indicates that our national defense must be supplemented if not dominated by aviation."

Such a statement, coming from so cautious a spokesman as the President, means more than casual comment. We prefer to let it stand without elaboration as its strength lies in its terseness.

The Sikorsky S29A Twin-Engined Transport Plane

By ALEXANDER KLEMIN

Associate Professor of Aeronautics, New York University

At the request of the Sikorsky Aero Engineering Corp. of New York City, a series of tests were recently carried out on the Sikorsky transport biplane by the senior aeronautical students of New York University, under the writer's direction. Tests were made at Roosevelt Field, L. I.

Thanks are due to the Pioneer Instrument Co., who generously lent many of their excellent instruments, thus greatly facilitating the tests.

Severe weather conditions prevented the carrying out of the full program of tests scheduled, but sufficient data was secured to give an idea of the performance of the plane.

Front and side views of the Sikorsky S29A transport plane, fitted with two 400 hp. Liberty engines

General Characteristics

Below is shown a front view of the Sikorsky Passenger plane and also a side view. The general appearance, while not departing greatly from conventional lines, is clean-cut and good.

The pilot is placed in a roomy cockpit and has excellent vision in all directions. Instruments in the cockpit and the engine controls are well arranged. There is plenty of room for the mechanic or observer who sits next to the pilot, and communication between them is easy. The comfort of both pilot and observer is well taken care of, an important feature in a long range machine.

The passenger cabin is roomy and comfortable, with splendid vision through the windows, plenty of head room and room to move about. The ventilation is excellent. Doors are provided on each side of the cabin. As shown in Fig. 2 the doors are in two parts. The upper part is a sliding door and can be opened in the air. The lower part when opened provides a stairway making access to the cabin easy. Passengers can communicate with the pilot through a door at the rear of the cabin. The cabin is free of all leads, gasoline fumes, etc. Nothing could on the whole be more desirable from a passenger's point of view.

Power Plant

The power plant is well installed. The motor installation forms with the oil installation a separate unit which can be removed and replaced in a very short time. The fuel system, consisting of gear pump and gravity tank, is simple and reliable. The fire hazard is reduced to a minimum. The radiators are placed at the back of the engine nacelles and can be moved up and down to vary the radiating surface, with a decrease in resistance when down and not exposed to the air.

In the central part of the cabin there are provided two openings permitting the mechanic to step out on the lower wing and at one step to reach the motors in flight.

Structural Features

The structure of the plane is rugged and simple. It is particularly promising from a production point of view.

The main spars of the wing are made up of cold-rolled steel

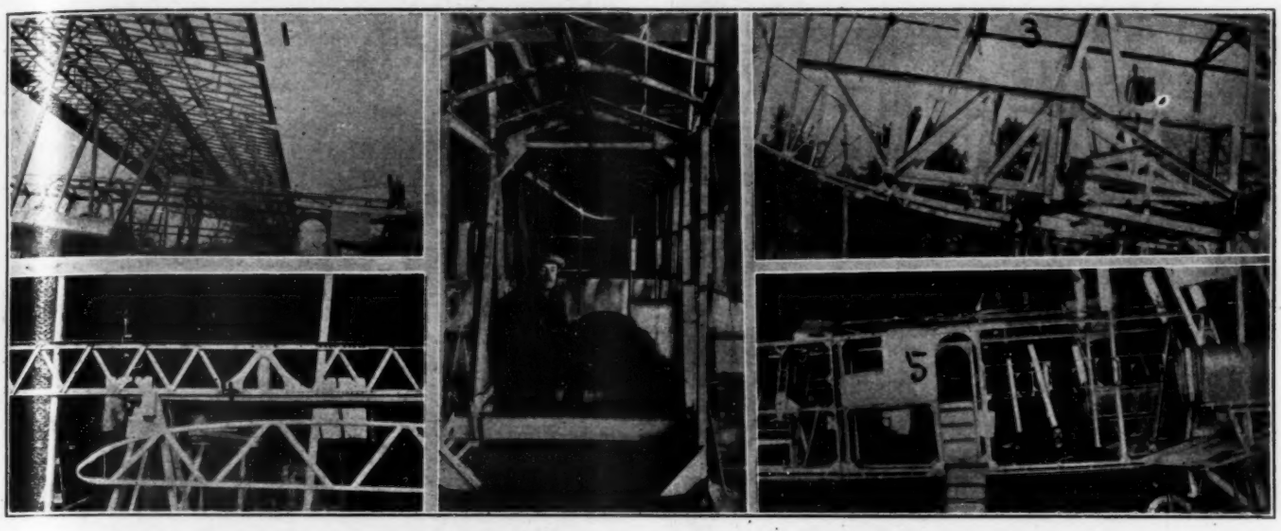
angles and channels, forming I-beams. A number of strong ribs, spaced about 3 ft. and made of duralumin channels and ties, 0.035 to 0.055 in. thick, connect the two main spars with six false spars running parallel to the main spars. Light intermediate ribs of 0.020 in. gage channel section are riveted to the main and false spars. The general character of the wing structure is illustrated in Figs. 1 and 4.

Figs. 2 and 5 illustrate the construction of the fuselage. The longerons of the fuselage are made of steel angles. At the parallel section of the fuselage the struts are made of steel channels, and toward the tail of duralumin channels. The transverse bracing at the cabin is very carefully taken care of by gusset plates as shown in Fig. 6.

The engine mounting as shown in Fig. 3 is extremely strong and well designed.

The landing gear, with shock absorbers hidden in the wing, has an exceptionally large shock absorber travel (12 in.) and gives very little shock on landing. It is well braced in all directions.

Control surfaces are also built up of steel and duralumin in practical and reliable fashion.



Constructional details of the Sikorsky transport plane—1, wing structure; 2, Mr. Sikorsky in the passenger cabin in process of construction; 3, engine mounting; 4, portion of wing spar; 5, fuselage structure

Control Surfaces

The control surfaces are ample and easily operated. An adjustable stabilizer is provided, which is readily operated by the movement of a lever in the pilot's seat.

The two outer rudders are single cambered with the camber on the inner side. This is particularly useful in the case of flight with one motor. When both motors are on, the rudders in normal position neutralize one another. When one engine is throttled down or goes out of commission, the rudder in the slipstream of the motor still running will exercise a turning tendency opposing the turning tendency of the motor. This simple arrangement should prove very useful for flight with one motor.

General Data

Overall length, 49 ft. 10 in.
Overall height, 13 ft. 6 in.
Span, upper wing, 69 ft.
Span, lower wing, 63 ft.
Chord, upper wing, 10 ft. 3 in.
Chord, lower wing, 5 ft.
Wing section employed, Sikorsky 18 (modification of Göttingen 436)
Incidence to thrust line 4 deg.
Total area of wings (including ailerons) 992 sq. ft.
Ailerons (2 on upper wing) 72 sq. ft.
Horizontal stabilizer area 58 sq. ft.
Elevator area 50 sq. ft.
Setting of adjustable stabilizer to thrust line, —1 to +4 deg.
Rudders (2 balanced), total area 38 sq. ft.
Weight empty (with water), 7775 lb.
Specified useful load, 4225 lb.
Specified gross weight, 12,000 lb.
Wing loading, 12.1 lb./sq. ft.
Power loading, 15.0 lb./hp.
Power plant, 2 Liberty motors rated 400 hp. at 1680 r.p.m.
Cabin space, 20 ft. by 4 ft. by 6 ft.; total volume, 480 cu. ft.
Designed safety factor, high incidence, 5; low incidence, 4.
Propellers: Hamilton.
Diameter, 10 ft. 4 in.
Pitch at ⅔ radius, 5 ft. 10 in.

Performance Tests

Flights with one Motor Throttled—Right and left hand turns were made at a barograph altitude of about 1100 ft., with right motor all out and left motor throttled down to 750 r.p.m. Both right and left hand turns were made with ease, but no steep banks were attempted.

Climb with one Motor Throttled	*Dec. 16, 1924*
Weight empty (with water)	7775 lb.
9 men	1530 lb.
108 gal. gas at 6 lb.	648 lb.
9 gal. oil at 7½ lb.	67 lb.
Equipment including 2 starters, battery, 10 chairs, fire extinguishers and miscellaneous	241 lb.
Total Disposable load	2,486 lb.
Gross weight	10,261 lb.

Initial recording barograph reading, 900 ft.
Final recording barograph reading, 1350 ft.
Duration of climb on one motor, 15 min.
Temperature, 38 deg. Fahr.
R.p.m., right motor, 1540.
R.p.m., left motor, 750.
Average air speed during climb, 70 m.p.h.
Corrected climb in standard air at 1125 ft., 28.4 ft./min.

Maximum Speed, Climb and Ceiling.		*Jan. 5, 1925*
Weight empty (with water)		7,775 lb.
12 men	2,040 lb.	
128 gal. gas	768 "	
12 gal. oil	89 "	
Equipment	185 "	
Disposable load		3,082 lb.
Gross weight		10,857 lb.

Maximum speed corrected to standard air at 550 ft. altitude, 111.2 mi./hr.
Minimum speed, 55.6 mi./hr.
Initial rate of climb, standard atmosphere, 692 ft./min.
Service ceiling, 12,300 ft.
Time of climb to 5000 ft. 8.8 min.
Time of climb to 10,000 ft., 23 min.
Motors on climb up to 10,000 ft., R. 1550; L. 1525.
Motors on climb above 10,000 ft., R. 1525; L. 1475.

Pilot's and Observers' Reports

The pilot during the performance tests was Igor I. Sikosky, designer of the plane. Student observers were John Benforte and O. Lundé.

Both student observers and the writer are able to report that the control of the airplane is exceptionally easy. Excellent steadiness in flight was observed under severe weather conditions. Sustained flight and gentle turns with one motor throttled offered no difficulty to the pilot. Landings were always made with ease and comfort. Get away was rapid.

Lieut. C. E. Archer, A. S. McCook Field, reports on the Sikorsky as follows:

"It is very easy on the controls, a very slight movement of the wheel being required for straight flight or turns. On the day of this flight, Nov. 11, 1924, the air was quite rough. I was particularly interested in the rigidity of the structure in flight; there was not the slightest vibration in any part that I could detect and the motors were quite rough. The airplane flew and actually climbed about 150 ft. in a very few minutes on one motor. The take-off was made in 9½ sec."

A Good Commercial Design

The Sikorsky plane shows that it was built under somewhat difficult conditions, with very little shop equipment available. Although adequate strength was maintained throughout, the designer is of the opinion that the weight could be easily reduced by 750 lb. The normal weight empty would then be about 7,000 lb., and the disposable load 5,000 lb. The entire design, while capable of refinement and lightening up, is an excellent commercial job suitable for passenger or freight transportation.

Book Reviews

CE QUE TOUT AVIATEUR DOIT SAVOIR. By André Lainé, Pilot-Officer of the Reserve, Professor at l'Aeronautique-Club, Paris. (173 pp., profusely illustrated. Gauthier-Villars et Cie., Paris.)

This is a second, revised edition of an excellent text book for airplane pilots which has become a classic in France.

LE VOIL A VOILE DYNAMIQUE DES OISEAUX. By Louis Breguet. (60 pp., ill'd. Gauthier-Villars et Cie., 55 Quai des Grands-Augustins, Paris, France.)

In this book M. Breguet gives a mathematical analysis of that little known phenomenon which the late Professor Langley called the "internal work of the wind," and which numerous experimenters are attempting to utilize in the operation of soaring machines. The author states that about all we know of this phenomenon is what Langley discovered, and that later experimenters generally confirmed his findings without, however, materially adding to the knowledge available.

DAS ZEPPELINLUFTSCHIFF. By Franz Kollmann. (90 pp., 69 ill. Verlag von M. Krayn, Berlin W., Germany.)

The origins and the development of the rigid type of airship invented by Count Ferdinand von Zeppelin from 1900 on down to the present days is vividly described in this work which is of the semi-technical, popular type.

Coming at the same time as the highly technical work on Zeppelin airships by Herr Duerr, Herr Kollmann's book fills a long felt want for an up-to-date compendium on this subject which the average person interested in lighter-than-air craft can understand, without being an engineer. The author describes the various chief types which marked the progress of the ships and then follows this up with brief notes giving the history of each ship. A large number of photographs, silhouettes and tables gives this work a lasting value.

REPORTS A33, A58 AND A77 OF THE NETHERLANDS AERODYNAMIC SERVICE ("R.S.L.").

Report A33 concerns pressure distribution experiments on the fuselage of an airplane model.

Report A58 contains a nomogram for the correction of incidence and drag of model airfoils tested in an airstream of finite dimensions.

Report A77 deals with experiments on the pressure drop in an air current cause by metal gauze.

THE MEASUREMENT OF FLUID VELOCITY AND PRESSURE. By J. R. Pannel. (135 pp., ill'd. Edward Arnold & Co., London.)

The author of this book was a member of the British Advisory Committee for Aeronautics who met his death in the disaster which befell the rigid airship ZR2 in August, 1921. He was a specialist on all problems associated with airships, and he initiated in England full scale research on airships. At the time of his death he was completing a treatise on the measurement of fluid velocities and pressures, a subject to which he had devoted the last years of his life. As a tribute to his memory this manuscript was completed and edited by R. A. Frazer, a colleague most closely associated with him in airship research work.

The book is divided into the following chapters: I. Pressure Tube Instruments. II. Moving Part Instruments. III. Hote Wire Anemometers. IV. Direction and Velocity Meters: Ship Logs. V. Manometers. VI. Flow of Fluids in Circular Pipes.

AERONAUTIC RESEARCH. By Dr. Joseph S. Ames, PHD., LL.D., Chairman, Executive Committee, N.A.C.A. (Smithsonian Institution, Publication 2728, Washington, D. C.)

A brief outline of the object of aeronautic research and of the fields in which it can most beneficially exert its functions.

ANNUAIRE DU BUREAU DES LONGITUDES POUR 1925. 686 pp., 7 charts. (Gauthier-Villars & ie., Paris, France.).

The "Bureau des Longitudes" answers in France much the same purpose which the Bureau of Standards does in this country. The annual under review contains a remarkable wealth of statistical information on the world's population, meteorology, astronomy, weights and measures, the principal calendars, etc.

Forces on Airships in Gusts

N.A.C.A. Report No. 204

The trials of the Shenandoah have proved that, as was previously suspected, the aerodynamic bending moments in approximately straight flight in gusty weather considerably exceed any which can be produced by maneuvers in still air. Hitherto it has been assumed that the conditions encountered in gusts could be approximately represented by considering the airship to be at an instantaneous angle of yaw or pitch (according to whether the gust is horizontal or vertical), the instantaneous angle being $\tan^{-1}(v/V)$, where v is the component of the velocity of the gust at right angles to the longitudinal axis of the ship, and V is the speed of the ship.

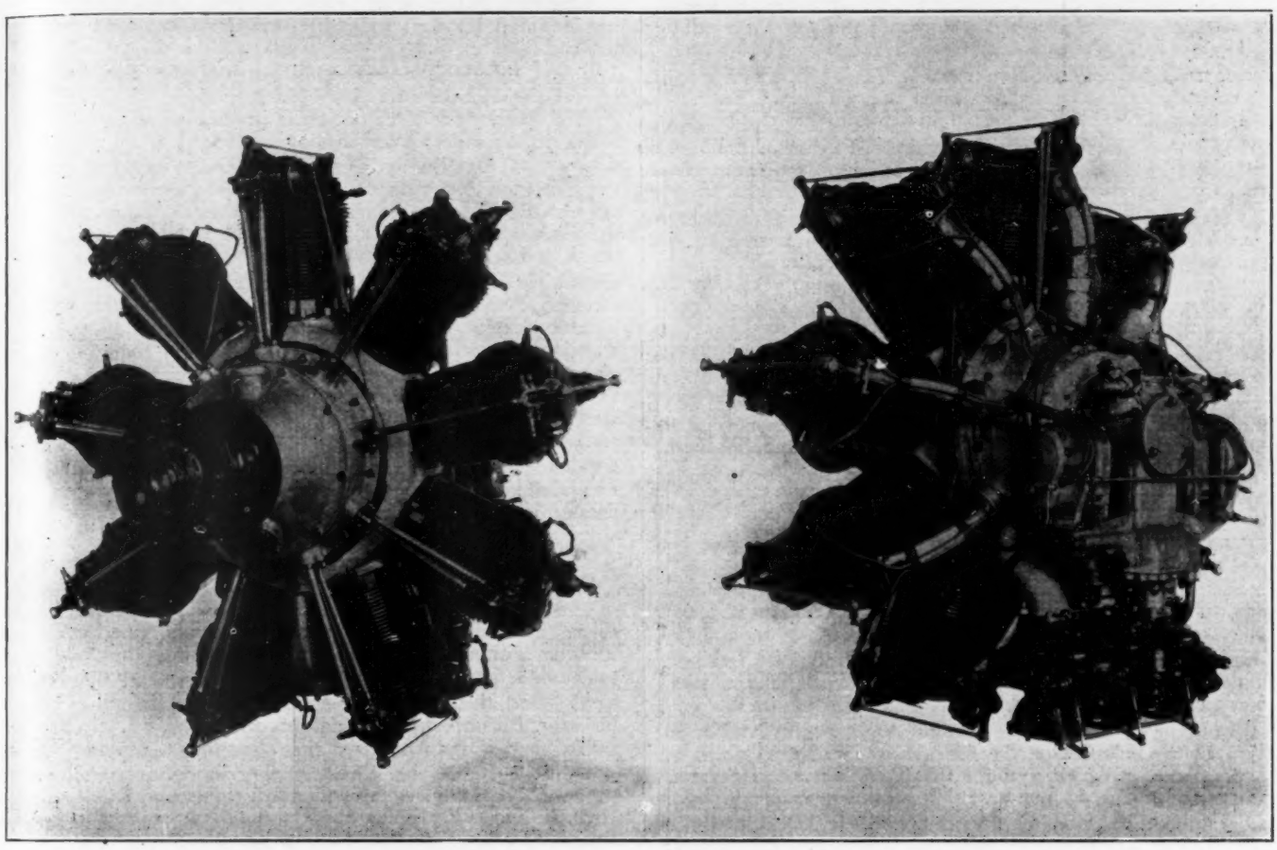
In this report, prepared for publication by the National Advisory Committee for Aeronautics by C. P. Burgess it is shown that in determining the instantaneous angle of pitch or yaw the acceleration of the gust is as important as its maximum velocity. An expression is derived for this instantaneous angle in terms of the speed and certain aerodynamic characteristics of the airship, and of the maximum velocity and the acceleration of the gust, and the application of the expression to the determination of the forces on the ship is illustrated by numerical examples.

A copy of Report No. 204 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

The Wright Cyclone Aviation Engine

New 400 hp. Air-cooled Radial Successfully Passes 50 hr. Navy Endurance Test

Slightly more than a year ago, the Bureau of Aeronautics of the Navy Department felt the need of an air-cooled powerplant to replace the Liberty engine in certain types of ships, principally torpedo and observation planes. This requirement necessitated an air-cooled powerplant of larger displacement than had been constructed in this country before. To add to the difficulty of designing such an engine, a limitation was placed on the diameter in order to keep the parasite resistance as low as possible.



Front and rear views of the new 400 hp. Wright "Cyclone" radial air-cooled aviation engine

A contract was given the Wright Aeronautical Corp. of Paterson, N. J., for the development and construction of three such engines, into which have gone the combined experience of the Lawrance as well as the Wright Companies. In this connection, it is interesting to note that the Wright Company, in 1920, won an Army design competition for a 300 hp. air-cooled radial engine, and subsequently built three engines, known as the Model R-1, which were the first large air-cooled engines to be built in the United States.

Dimensions of Engine

The Wright "Cyclone" or P-1, as the new engine was called in the original engineering plans, is a fixed radial, with nine cylinders having a 6 in. bore and 6½ in. stroke. The total displacement is 1,650 cu. in., which is the same as that of the Liberty engine.

The external appearance of the engine, as can be seen from the accompanying illustrations, is remarkably clean. There is one unique feature, that will be immediately noticed, namely, the valve gear. The valves, instead of being located in a plane at right angles to the crankshaft, are located in the plane of the crankshaft with the exhaust valve forward and the inlet valve to the rear. The operation of the exhaust valve is orthodox by means of a push rod and rocker arm, but the inlet valve is operated by a pull rod across the top of the cylinder. The valve gear is located in front of the engine, and all the accessories at the rear, including carburetors, magnetos, pumps, strainers, etc.

The cylinders have steel sleeves, steel fins and aluminum heads.

The development of this engine followed the usual practice of the Wright Company, namely, the design and development of a single cylinder, followed by the complete design of the engine and the construction of the first one. It was found that the orignal limitation of diameter was detrimental to the proper operation of the engine, so that it was necessary to increase the length of the cylinder slightly, although even with this slight increase the diameter of the engine from the tops of the cylinders is very much less than any engine of this power heretofore constructed. In fact, the external diameter of the Cyclone is no greater than that of the Wright Whirlwind 200 hp. radial engine, which, it will be seen, is a remarkable tribute to the engineering ability of the Wright Company.

A 50-hr. test has recently been completed, which was run in accordance with the Navy's Specification E-4-D.

As this engine has been developed for the Bureau of Aeronautics, Navy Department, we are not at liberty at this time to give further information in regard to it, except to add that the Cyclone develops well over 400 hp. at a specific weight of less than 2 lb./hp.

$22,000,000 More For Aircraft Carriers

Bill Authorizing Increase Passed House—Will Probably Pass Senate

The Bill authorizing the Navy Department to increase the cost of the Lexington and the Saratoga from $23,000,000 to $34,000,000 has passed the House and in all probability will be approved by the Senate.

In the hearings held during which the Bill was considered much new information concerning these ships was made public. Secretary Wilbur wrote to the Committee the following letter urging the increase in cost:

Construction Long Delayed

"There is inclosed herewith a proposed draft of a bill 'To authorize an increase in the limits of cost of certain naval vessels.'

"The purpose of the inclosed bill is to authorize an increase in the limits of cost for the aircraft carriers Lexington and Saratoga from $23,000,000 to $34,000,000 each.

"The Lexington and Saratoga were originally two of the six battle cruisers included in the building program of Aug. 29, 1916. Contract for the Lexington was entered into with the Fore River Shipbuilding Corporation, Quincy, Mass., under date of April 26, 1917, and contract for the Saratoga with the New York Shipbuilding Corporation, Camden, N. J., under date of May 5, 1917. Practically no work was undertaken on these vessels during the war, due to the necessity for concentrating on vessels of other types for which the need was more immediately urgent and which could be expected to be completed in time for service in the war.

"As a result of experience in the World War, the construction of these vessels was further delayed to permit a redesign mainly for the purpose of increasing the protection against gun and torpedo attack, which redesign materially increased the size of the vessels. As a result of these delays, the keels were not laid until Jan. 2, 1921, for the Lexington and Sept. 25, 1920, for the Saratoga. Work on the vessels was stopped Feb. 8 ,1922, following the signing of the treaty limiting naval armament. At that time a considerable portion of the hulls below the water line had been erected and the reported progress was for the Lexington 33 per cent and for the Saratoga 34 per cent. The conversion of the vessels to airplane carriers, in accordance with the terms of the treaty, was authorized by the act of July 1, 1922.

"The original contracts for the two battle cruisers were on the basis of cost plus 10 per cent. This was changed to cost plus a fixed fee for the Lexington under date of Dec. 7, 1920, and for the Saratoga under date of Oct. 11, 1920. The conversion to aircraft carriers was authorized by naming the particular vessels that were to be so converted. It was not practicable to negotiate a change in the form of contract to one providing for a fixed price, and the department therefore entered into supplementary contracts with the builders to complete the vessels as aircraft carriers, these contracts continuing the construction on the same basis as provided in the battle cruisers contracts, namely, cost plus the same fixed fee.

Original Cost of Carriers

"The original limit of cost on the Lexington and Saratoga on battle cruisers, as given in the act of Aug. 29, 1916, was $16,500,000 each, which limit was raised to $19,000,000 by the act of March 4, 1917 . In the case of both of these limits the general provision of law authorized an increase of 20 per cent if necessary to expedite construction. By the act of July 11, 1919, the limit of cost was fixed at $23,000,000 each, which was the limit at the time the conversion to airplane carriers was authorized.

"While the conversion of the vessels to airplane carriers materially reduced their displacement, the reduction was mainly in the battery and armor, and the amount of work required under the limit of cost was not greatly changed. No change was made in the limit of cost at the time the conversion was authorized, as it was expected that the vessels might be completed within the then limit of cost of $23,000,000 each. This expectation was based on the belief that there would be a gradual adjustment downward in wages and material prices and that the bulk of the construction work would be carried out in a market approaching the pre-war level. Instead of a reduction in prices, however, costs of both labor and material have risen further, and it is apparent that the present limit of cost of the vessels will be greatly exceeded. The best information now available indicates that the limit of cost should be fixed at $34,000,000 each.

"The main part of the increase in the cost of construction is due to the same causes that have resulted in an increase in the cost of construction of other vessels building at private shipyards on cost-plus contracts and of vessels building at navy yards during the period since the war. These are, first, the increases in wages and prices of material, which now stand at about 1.8 as compared with the 1916 level; and, second, the increase in the overhead expenses due to the small amount of shipbuilding work which has caused shipbuilding plants to operate at much below their normal output. In addition to the above causes, which affected the cost of all vessels under construction during this period, the cost of these two vessels has been further increased, though to a lesser extent, by the cost of certain work undertaken for the vessels as battle cruisers and which could not be utilized in their construction as airplane carriers, and by the additional delay necessitated by the preparation of a new set of plans in connection with the conversion.

Approved by Director of Budget

This proposed legislation was submitted to the Director of the Bureau of the Budget, as required by Circular No. 49 issued by that bureau, for information as to whether or not it came within the financial program of the President, and under date of Jan. 2, 1925, the director advised the department "that this proposed legislation is not in conflict with his (the President's) financial program.'

"In view of the foregoing, this department urgently recommends that the limits of cost of the Lexington and Saratoga be fixed at $34,000,000 each. In this connection it is estimated that the expenditures on these vessels will reach the present limits of cost ($23,000,000) sometime during the coming summer."

The following facts regarding the new aircraft carriers are of interest.

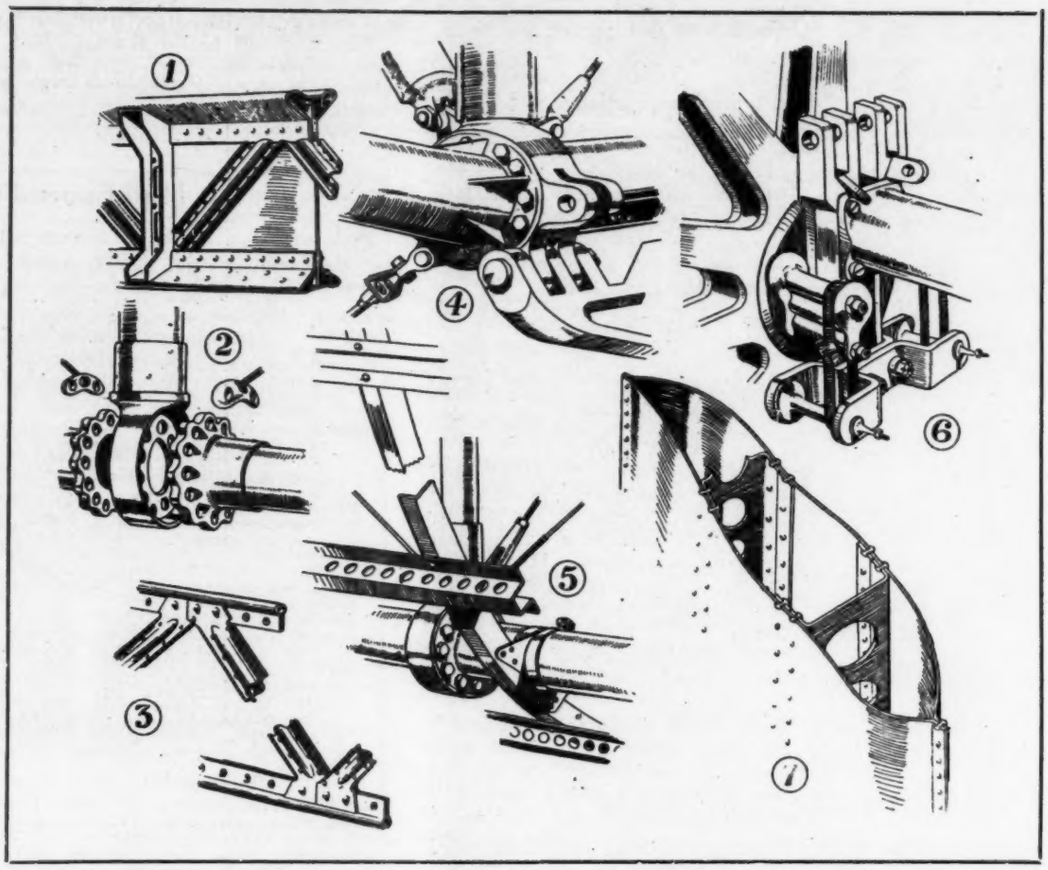
Both vessels will have engines developing 180,000 hp. or twice the power of any other ship in the Navy. Their speed will be between 33 and 34 knots. They will be faster than any ship in the Navy. The reason for this was stated by Admiral Robinson. "These vessels," he testified, "will be called upon to take their places on the scouting line. They will have the same speed as our scouts and the fastest enemy scouts. The major value of these craft is in connection with the Grand Fleet or battleship fleet, and for that purpose a considerable excess of speed over the speed of battleships is necessary because you may want them first on one and then on another flank of the line, or, having taken position in the scouting line, they will have to drop back and join the fleet itself. These particular ships are intended to accompany the Battle Fleet and form a part of it, and enable the Battle Fleet to deal effective blows by airplanes."

These ships were contracted for originally on a 10 per cent cost plus basis but that has been changed to a fixed fee of $2,000,000 each to the builder.

Another Polar Flight ?

A group of Italian aviators are organizing for the continuation of the polar expedition attempted by Lieutenant Locatelli last year, according to the Italian newspaper *Sereno* of Rome. The aviators, it is said, plan to fly from Northern Europe to America by way of the polar regions.

Details of French Metal Construction



The excellent sketches which are reproduced herewith by courtesy of *The Aeroplane* will give our readers a comprehensive view of some outstanding French practice in the construction of metal aircraft. The details shown are those of the Bréguet 19 light bomber and observation plane on which Capt. Pelletier Doisy made his now famous dash from Paris to Shanghai.

In sketch 1 is shown a wing-spar, which is a built-up H section. The top and bottom members are of a simple drawn section, the web is flat plate, and the diagonal stiffeners could be drawn and cut off to length or stamped in the required lengths. The vertical stiffeners are stampings—one of these is fitted under each rib.

Sketch 2 shows a fuselage joint. The longerons, of duralumin tubing, are in relatively short, straight lengths. The joint-components are duralumin die-forgings, pinned to the tubes forming the fuselage frame. The flanged faces on the longeron sockets, and the corresponding face of the strut socket are machined to a small angle out of normal to the tube axis, and by rotating the parts relatively to each other the same fitting can be used for a series of different angles between consecutive longeron lengths. Only two types of fitting are required for the whole of the fuselage. The bracing-wires have ball-end fittings, as shown, carried each by a pair of the bolts of the main joint. Cross-wires are carried from lugs on the strut-socket itself. Sketch 4 shows a joint of essentially similar nature, which provides for the attachment of a wing spar, the undercarriage, undercarriage cross-bracing, an engine-bearer tube and bracing wires.

The rib construction is shown in sketch 3. The rib booms are of very simple form. All the diagonals are of identical section and have identical ends. There are 64 different overall lengths for these diagonals, but all are formed with one die—which presses out one end of the diagonal only at the time. The half-formed stamping is then turned round and the other end pressed, the correct length being secured by a jig.

In sketch 5 a standard fuselage joint and the arrangement of the fairing frame-work is shown.

Sketch 6 shows the wheel and axle fitting. The wheel itself is an Alpax casting. The axle is bolted to a steel block fitted with lugs for the attachment of the undercarriage leg. On machined-slides on the block slides the wheel hub—the block has a projection passing right through the hub, carrying on its outer end lugs for the attachment of the wing bracing.

The construction of the raking interplane strut which, in normal flight, is really a lift wire is shown in sketch 7. It will be seen that the elements employed for building up the structure are none of them of a very intricate nature, and can easily be produced at a reasonable cost, once the necessary dies and jigs are in existence.

Air Speed Measured by Sound

The French Academy of Science recently heard a report describing an ingenious invention enabling an aviator to gage the exact speed at which he is flying by sound. The inventor is De Grammont de Guiche.

Various methods to record flying speed already exist, but all necessitate reading apparatus registering flight, thereby temporarily preventing the pilot from observing the ground or making other necessary visual observations.

In the new appliance two small sound boxes are placed at the extremity of the wings and connected by an alternating current with a telephonic receiver at the pilot's ear. By the sound he can tell exactly the speed he is making and when he reaches figures beyond which, as in a dive, it is dangerous for the wings.

Convert Rotary into Radial Engine

Tips & Smith, aeronautical dealers of Houston, Tex. announce that they have acquired an exclusive license to convert rotary engines into radial engines, using the Quick design for which patents have been applied. The engine as modified by this process will develop 110 hp. at 1500 r.p.m. and weigh less than 300 lb.

Engines converted under this license are now being block-tested and are reported to be performing satisfactorily. Flight tests are being arranged for.

Production for the commercial market will begin upon completion of the tests now conducted and will be rushed on account of the scarcity of suitable small engines for the present day commercial flier.

This Year's Air Races

The Contest Committee of the N.A.A. met with representatives of the various governmental departments, aircraft trade organizations, and other interested parties at N.A.A. headquarters on Jan. 29. The purpose of this meeting was to discuss the general program of aircraft sports to be pursued in the United States during 1925. Outside representatives as noted above were called in to give the Contest Committee the benefit of their suggestions.

On Jan. 30 the Contest Committee met to review various race regulations and to arrive at the location of various contests wherever possible. The following decisions were made.

The Jacques Schneider Race will be held at Baltimore, Md., on a date yet to be determined. This date however will fall between Oct. 24 and 31. Regulations for this Contest remain the same as for 1924. Entries close April 1, 1925.

The Pulitzer Trophy Race will be held between Sept. 17 and Oct. 3. The location has not yet been decided.

The regulations for the Pulitzer Trophy Race will remain the same as for 1924 with the exception, however, that foreign entries may test their wing models in an approved tunnel in their respective countries, instead of sending their wing models to M.I.T. for test, as was required last year.

In view of the fact that France has taken the world's high speed record from this country, it appears very possible that they will send their fast planes to America to compete for the Pulitzer Trophy this year. It is doubtful if their present planes can meet the landing speed requirements, but information obtained from authoritative quarters indicates that preparations are being made to install larger wings and otherwise refine their speed planes.

In view of the fact that this is an international competition, it has been necessary to close entries for the Pulitzer on April 1, next.

The Committee after very careful deliberation decided to place the engine limits for single seater light planes at 80 cu. in. In view of the fact that development has not progressed far enough, the Committee did not feel it desirable to place limits for two-place light planes, although they passed a recommendation that 160 cu. in. would receive favorable consideration if the occasion demanded.

Other contests were reviewed and some modifications made in the 1924 regulations.

National Balloon Race

Preliminary arrangements have been made by the National Aeronautic Association with St. Joseph, Mo., to conduct the National Elimination Balloon Race from that city on May 1, next. This race will be for free balloons of the third, fourth, and fifth categories, inclusive, (31,000 cu. ft. to 81,500 cu. ft.) and will be held in full accordance with the F.A.I. Rules and Regulations.

In view of the fact that coal gas is not available at St. Joseph, a mixture of either water gas or natural gas and hydrogen will be supplied the contestants. The same general plan of mixing and distributing this gas will be followed as that used in the 1924 Race from San Antonio.

This race will be for the Litchfield Trophy and will also serve to pick the team of three contestants to represent America in the first contest for the second Gordon Bennett Cup to be held at Brussels, Belgium, on June 7.

Air Mail Expenditures

Following is a report of revenue and expenditures of the Air Mail Service, covering the month of December, 1924, as issued by the office of the General Superintendent.

REVENUE (Excess Postage)			$58,173.17
EXPENSES			
Maintenance of Way			
Fields	$30,026.05		
Lights	10,394.87		
Communication	11,713.85		
Motor vehicles	4,796.41	$56,931.18	
Maintenance of Equipment			
Rebuilding ships	59,064.44		
Rebuilding motors	7,017.77		
Repairing field equipment	2,715.47		
Warehouse	2,667.03	71,464.71	
Transportation			
Pilots' base and mileage pay and travel expense	26,167.19		
Gasoline	13,673.83		
Oil	3,533.55		
Forced landings	190.58	43,565.15	
Executive Overhead			
General Supt's Office	7,886.40		
Office of four Div. Supt's	3,069.25		
Supt. of Repair Depot and Warehouse	1,778.33	12,733.98	
CAPITAL			
New buildings	None		
New lighting equipment	25,252.07		
Ground improvements	None		
New flying equipment	12,140.75		
New miscellaneous equipment	None	37,392.82	
GRAND TOTAL			$222,087.84

Maintenance of Way

Expenditures under fields includes rent, fuel, salaries of office force, travel expense and mileage scrip.

Expenditures under lights includes salaries of caretakers, and miscellaneous equipment.

Expenditures under communication includes telephone, telegraph, radio supplies, salaries and travel expense of radio operators.

Expenditures under motor vehicles includes gasoline and oil, and miscellaneous equipment for motor vehicles, and salaries of chauffeurs and auto mechanics.

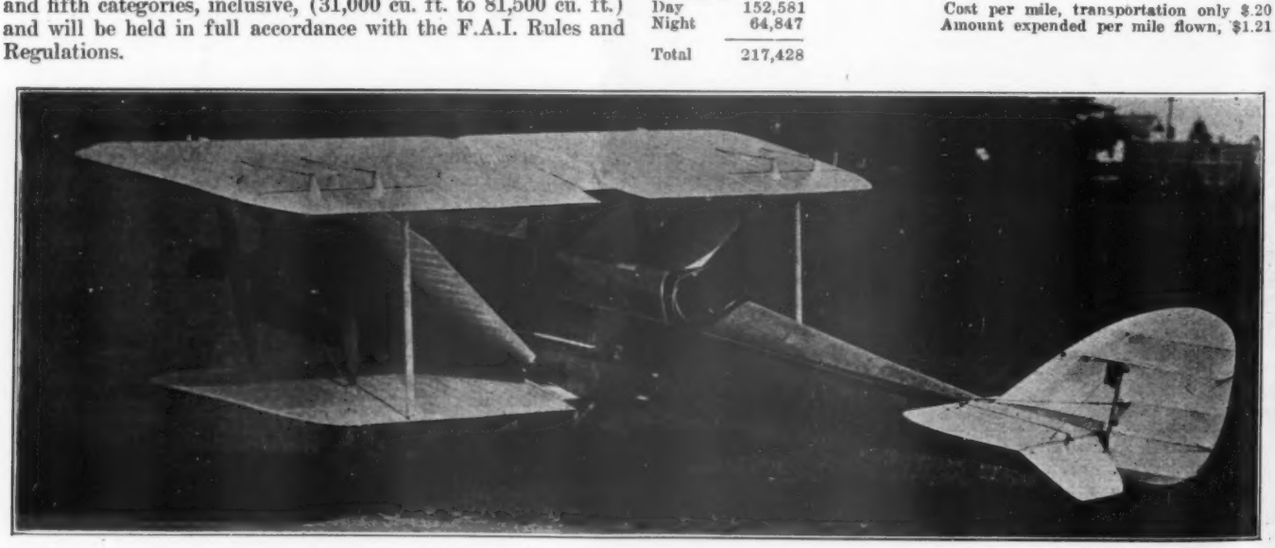
Maintenance of Equipment

Expenditures under rebuilding ships includes wages of airplane mechanics and helpers and miscellaneous equipment.

Expenditures under rebuilding motors includes wages of motor mechanics and helpers and miscellaneous equipment.

Expenditures under warehouse includes warehouse employees and stock clerks' wages.

MILES FLOWN		
Day	152,581	Cost per mile, transportation only $.20
Night	64,847	Amount expended per mile flown, $1.21
Total	217,428	



P. & A. Photos

Bellanca-DH mail plane of the U. S. Air Mail Service, a ship of notable qualities which has done over 100,000 mi. of flying on day and night service between Chicago and Cheyenne

Lawrence D. Bell

Lawrence D. Bell, Vice President and General Manager of The Glenn L. Martin Co. since 1921, has resigned to associate himself for the present with his brother, Vaughn Bell, of Los Angeles, in operating a chain of West Coast Department Stores. Vaughn Bell has spent the past fifteen years in department store management in Los Angeles.

L. D. Bell was born April 5, 1894, at Mentone, Ind., and was educated in the Polytechnic High School at Santa Monica,

Lawrence D. Bell

Calif. Starting with The Glenn L. Martin Co. in 1912, as stock clerk immediately after leaving high school, Mr. Bell saw the factory grow from twelve employees to nearly 500 during which time he worked as a mechanic in every department, was later foreman in every department, and was factory superintendent of the Los Angeles plant in 1917, when he was transferred to the Wright-Martin Aircraft Company in New York. Mr. Bell has the unique and probably unduplicated experience of not having missed a single day's pay in the aircraft business in thirteen years. In addition he has had experience in every angle from engineering to flying instruction, has been purchasing agent and is the oldest employee of The Glenn L. Martin Co. His administrative work of the last five years has won him the esteem and respect of the men from whom he has received 100 per cent cooperation in the constant development of the airplane for the Army and Navy.

Those who know Lawrence D. Bell doubt his ability to stay away from aircraft which, like the railroads and the stage, exert a magnetic influence that draws men back; and his admiration for The Glenn L. Martin Co. and its achievements to which he has so largely contributed may serve as a second magnet.

He reached the apex of human achievement in 1915 when he secured more subscriptions to AVIATION than any man living. He sold one to every man in the Martin Company.

Another Blast at the "Lad" Grey

Under the caption "Flights of Fancy" the following letter appeared in *The Army and Navy Journal:*

I have just read an article by an Englishman, a Mr Grey, published in a magazine called "Aviation," issued under date of Oct. 6, 1924.

For sheer insolence I have seldom seen this equaled. Early in the article this young man ventures to assert that it is unfortunate that the Marine Corp should be more or less dominated by the Navy.

He next becomes verbose about how the Army conducts its aircraft experiments and suggests ways for the Government to turn over large amounts of money to certain self-appointed producers. His comparison of contract letting with Naval maneuvers is particularly illuminating. Also his boast that the producers have trained the Royal Aircraft officials so as to have a free hand is interesting.

Next this lad has a few words to say about the Navy. He leads off with a general insult to all Naval officers, followed by a specific statement that those in charge of aeronautics are particularly stupid, and then comes an attack on the British Naval authorities in the World War. This is completed by a flat statement that the Navy is incompetent to handle aircraft strategically, tactically or mechanically.

I do not know who Mr. Grey is or why anyone should trouble to print his views. It would seem that the promoters of this business have some difficulty in convincing experienced officers in the Army and Navy that they are the sole custodians of applied intelligence, and think that it might be easier to put over certain necessary jobs if instead of being obliged to deal with experienced men, mostly from Missouri, it were feasible to deal with inexperienced men that have shown a certain facility in the mechanical manipulation of a flying machine.

The publication "Aviation" is doubtless engaged in catering to a particular clientele, but even so, it appears to be printed in the United States and presumably by Americans. Such being the case, why are they engaged in spraying the American Army and Navy with this inferior quality of lime juice.

P. SYMINGTON,
Captain, U.S.N.

Catalogs Received

DE HAVILLAND AIRCRAFT. (The De Havilland Aircraft Co., Ltd., Staglane Aerodrome, Edgware, Middlesex, England.)

This is one of the most comprehensively and attractively edited aircraft catalogs that have yet come to hand. Full performance figures are given for the various types of aircraft manufactured and these are illustrated by excellent photographs and sketches drawn by Leonard Bridgman. The De Havilland patent differential aileron control gear and the DH aero engine starter are also described.

LES CARBURATEURS ZENITH ET LES MOTEURS D'AVIATION. (Received from the Zenith Co. of France.)

This catalog describes the principles underlying the Zenith carburetor with the aid of some beautiful color diagrams. It also contains power curves of some recent French aircraft engines, such as the 200 hp. and 300 hp. Hispano-Suiza, the 300 hp., 450 hp. and 550 hp. Renault, and the 400 hp. and 450 hp. Loraine-Dietrich.

"AVIS". (Avis Flugzeug und Autowerke G.m.b.H., Vienna, Austria.)

This is a new Austrian aircraft manufacturing firm which was formed since the war. It manufactures a three-engined transport plane and a training plane.

Another World Record Broken

At Etampes, France, on Jan. 25 Sergeant Major Descamps, the French aviator, broke the speed record for 500 km. (310.69 mi.) for airplanes carrying a load of 500 kg. (1,102.31 lb.). He covered the distance in 2 hr. 20 min. 48 sec., an average per hour of 213.053 km. (132.38 mi.). The former record was held by the American aviator Louis Meister.

Descamp's intermediate timings showed 100 km. in 27 min. 10 sec., averaging 220.7, and 200 km. in 55 min. 20 sec., averaging 216.828. These also are new world's records, formerly held by Czechoslovakians, Captain Kalla and Sergeant Kaspar, respectively.

What Ails Aviation in America?

We point with justifiable pride to the invention of the practical heavier than air machine for which credit must be given to Langley, Wright, Curtiss and others. We have likewise built planes with which wonderful records have been made, both as to speed, load and duration of flight. The building of the Douglas world cruisers is of itself a noteworthy achievement. Noting all these things one might seem justified in asking if anything ails aviation in America.

The recent races at Dayton, however, as well as numerous other things, indicate that there is decidedly something the matter. For in spite of the millions spent at McCook Field and elsewhere the army did not have a single new plane in the air at this meet. Instead it flew Curtiss ships two years old, which had been stressed to such an extent that two of them went to pieces, carrying two of the best army pilots to untimely deaths.

The trouble with American aviation is that we have no kind of a policy, continuous, intermittent or any other kind. We are, according to a keen British observer, in exactly the same position as Great Britain was before the advent of their present Air Minister. It is the Air Minister's job to see that the British aircraft industry is preserved for future usefulness by keeping it reasonably busy and giving it a square deal. In contrast with this we find our own aircraft industries struggling along or closing their doors and allowing their trained personnel to scatter to other fields.

The British Air Ministry has decided that some twenty firms have proved themselves worthy to be kept alive for the benefit of the country itself. When one of these firms produces a plane that is worth putting into production, a price is agreed upon for a definite number. In order to keep the other firms alive they receive sub-contracts from the same order, unless designs of their own are considered good enough to build in quantity.

The plan works well and all of the twenty firms are kept reasonably busy. They know that when they bring out a sufficiently advanced design, their firm will get the next big order, and their competitors will have the sub-contracts. The firm getting the order is responsible for its sub-contracts, leaving the fate of the industry in its own hands. The Air Ministry takes pains to keep on placing orders as regularly as possible so as to keep the industry working and avoid the expense of shut downs.

Such a policy would do much for the aircraft industry in this country. As it is, the millions are, for the most part, spent at McCook Field and the Naval Aircraft Factory while the builders who have developed the only ships both army and navy are using, are compelled to close their doors or run with a skeleton force.

Both McCook Field and the Naval Aircraft Factory have their place. But without a responsible and progressive air ministry, under whatever name, they are costing millions which should be spent in securing increasingly better planes and equipment from our most progressive builders.

We are spending about $400,000,000 for aviation, of which the Post Office gets but 2 per cent. Yet we have comparatively few planes and not a single new ship to fly in the races at Dayton.

A capable Air Secretary would go far toward removing the ills of American Aviation!—*American Machinist.*

Letter from a Wife

Editor, AVIATION:—

If a mere woman is allowed to express a thought through your column, and if her opinion carries any weight whatsoever, then I should like to comment and criticize, as the case may be.

I am a "wife of the industry", that is, a wife of one of the industry who for ten years has watched aviation in every phase with more regularity than our meals. To say I am over whelmingly interested in the subject is indeed putting it mildly: I live it. Even my fashion magazines have been supplanted by AVIATION, *Slipstream, Aerial Age,* and the such.

Jesting aside: I have watched with great pleasure the gradual development of your paper from its first issue to the splendid sheet it is today. You undoubtedly occupy a place apart from the rest.

Your adept marshalling of hitherto recondite facts regarding the ruthless and undefensible expenditure of government appropriations has been both judicial and thoroughly convincing. I congratulate you.

Your fight has been clean and has at no time smacked of a personal grudge. Your aim is as accurate as it is deadly.

Should I at any time carry a banner it would flaunt the following:

"Separate Air Service, more appropriations more wisely spent and the immediate process of clipping the excrescences from the existing requirements."

Wishing you unbound success for 1925, I am

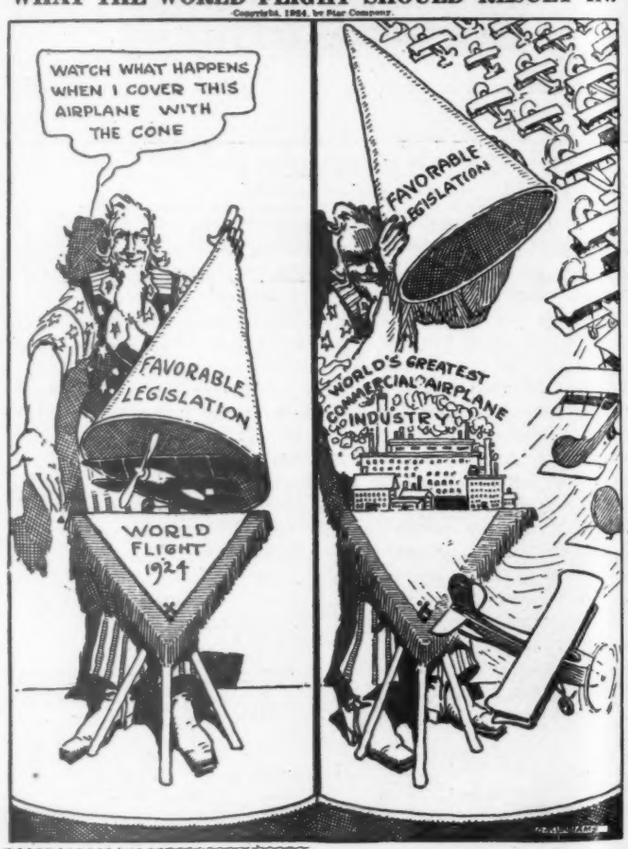
A WIFE
Detroit, Mich.

Progress of Winslow Bill

The Winslow Bill, or "Civil Air Navigation Bill," has been favorably reported by the House Committee on Interstate and Foreign Commerce and substituted as an amendment to the Senate Bill, S. 76, which has already passed the Senate. Therefore, as soon as the House passes the Civil Air Navigation Bill in its present form, as an amendment to S. 76, it will be ready to be submitted to a joint Committee of Conferrees of the House and the Senate.

All businessmen, Chambers of Commerce and other organizations throughout the country, who desire this legislation, should immediately communicate with their Congressmen and Senators, urging them to attend to this business before adjournment. If the attention of Congress is properly and promptly directed to this legislation, it is entirely reasonable to expect its passage this session.

WHAT THE WORLD FLIGHT SHOULD RESULT IN.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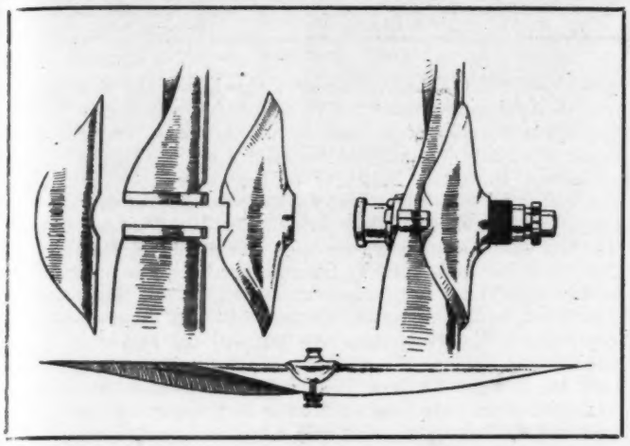
WATCH WHAT HAPPENS WHEN I COVER THIS AIRPLANE WITH THE CONE
FAVORABLE LEGISLATION
WORLD FLIGHT 1924
FAVORABLE LEGISLATION
WORLD'S GREATEST COMMERCIAL AIRPLANE INDUSTRY

Courtesy, New York American

Nieuport Produces Steel Propeller

The appearance of the Reed duralumin propeller on the French aircraft market—where it is built under license by M. Levasseur—seems to be threatening the practical monopoly of the wooden propeller in more than one way. Now that the



From *The Aeroplane*

The new, variable pitch, steel propeller produced by the Nieuport-Astra Co.

Levasseur-Reed propeller has given a telling measure of its worth on the record breaking Ferbois monoplane, French aircraft manufacturers seem to have a more open mind toward metal propellers than heretofore.

Thus, at the Paris Aero Salon the Nieuport-Astra company exhibited its type 42C2 combat plane equipped with a most unusual looking steel propeller, sketches of which are shown on this page.

The blades of this propeller are cut out of a length of round steel tube—in this particular case of 10 to 12 in. diameter and some ⅜ in. thick. Each blade section is thus a circular arc in section, the chord of the said arc being arranged at an appropriate pitch angle. The blade so formed is rounded at the leading and sharpened up at the trailing edge.

One end of the tube from which the blades are cut has a projecting flange left on the outside, and this end forms the root of the blade.

The two blades are clamped between a pair of boss plates, which fit against the inner and outer cylindrical faces of the blade, and one of which has in it a groove which takes the flange on the blade. The two boss plates are clamped up tight on the blades by the ordinary airscrew boss nut, and are fitted internally with splines—or an appropriate keyway—to fit the shaft of the engine.

The whole of the tension on the blade roots is thus taken on the flange of the blade and the groove in the boss, and the blade-pitch setting is maintained by friction between the blades and the boss plates. Obviously the blades can be adjusted for pitch. This type of screw is undoubtedly cheap and simple to manufacture, but it looks rather heavy.

Flying tests of this propeller will be looked forward to with considerable interest.

The Helium Bill

Development of commercial airships in America will be seriously delayed unless pending legislation affecting helium is passed at the present session of Congress, P. W. Litchfield, vice president of The Goodyear-Zeppelin Corp. of Akron, Ohio, declared in a statement recently made public. Mr. Litchfield urged support for measures now pending and designed to stop the annual waste of millions of cubic feet of helium gas, and to make surplus helium not needed by the Army or Navy available for commercial use.

The United States has practically a monopoly of the world's supply of this gas, while other nations have to use hydrogen, which is inflammable. America would have a tremendous advantage in the possession of the non-inflammable gas in case of war.

The Military Affairs Committee of the House was told last week by Representative Fritz G. Lanham of Texas that in 1917 helium cost $1,500 a cubic foot to produce, but can be refined now at a cost of 6½ cents a cubic foot. Increased production and improved methods should bring the cost still lower, perhaps to three cents. The principal sources of supply are in Texas, although helium has been found in Oklahoma, Utah, Kansas, Indiana, West Virginia and Pennsylvania.

The pending Bill would authorize the Federal Government to preserve for the use of the country's military establishment all public lands containing gas wells from which helium can be obtained. The gas from these wells is being used daily by private consumers, and the loss of helium thereby is estimated at 500,000,000 cu. ft. a year, or enough to fill 200 airships the size of the Los Angeles.

Passage of the conservation measure would authorize the Government to establish plants for extraction of helium from natural gas, after which the helium would be stored for the use of Army and Navy airships and when the supply became sufficient, the surplus may be sold or leased to private users. "Much of the success of the experiments with huge dirigibles by The Goodyear-Zeppelin Corp. at Akron, both for military and commercial purposes, depends upon the conservation and availability of the present supply," Mr. Litchfield declared.

An appropriation of $5,000,000 is provided as part of the regular Army or Navy Appropriation Bill to start the work of conserving helium.

Air Expenditures of Great Powers

Maj. Gen. Mason H. Patrick, Chief of Air Service, recently gave to a Congressional Committee figures which contain a very comprehensive comparison of what the leading nations are spending for aviation.

For the current fiscal year, he said Japan had appropriated $12,000,000; France, for the fiscal year 1923-4, $50,000,000; Great Britain, for the fiscal year 1924-5, $95,000,000. The United States, he estimated, spent $56,000,000 last year for all air services.

The strength of the respective air services were given by General Patrick as follows:

United States Army, officers, 977; Navy, 622; total, 1,599; enlisted men, Army, 9,154; Navy, 3,598; total, 12,752.

England, both services, officers, 3,262; enlisted men, 28,337.

France, both services, officers, 1,386; enlisted men, 31,676.

Japan, both services, officers, 660; enlisted men 3,000.

Italy, both services, officers, 683; enlisted men, 6,000.

On Sept. 30 of last year the Army Air Service had 820 observation planes, 102 bombardment planes, 190 pursuit planes, and 9 attack planes, a total of 1,121. These, General Patrick stated, were divided into three classes: the first ready for war duty, the second for use in an emergency but unstable, and the third unfit for hard work and really held in reserve for training purposes. There are no observation planes in the first class, there are 183 planes in the second class and 682 in the third. These are all service planes, but there are in addition 379 for training and 92 for transition from training to actual duty.

Enlisted men are encouraged to become fliers if they have the necessary qualifications. There are about fifty qualified enlisted fliers and they are made use of as freely as the officer personnel. There are 963 commissioned officers in the service out of an authorized strength of 1,247.

Air Mail Bill Becomes Law

President Coolidge signed on Feb. 2, last, the Kelly Bill authorizing the Postmaster General to contract for the carrying of air mail by private aircraft operators over routes designated by him.

The Bill, which passed the Senate on Jan. 27, provides a minimum postage rate of 10 cents per ounce on all first-class mail and stipulates that four-fifths of the postage shall be paid to the aircraft operator for the mail carried.

AIRPORTS AND AIRWAYS

Cleveland News

By Cy Caldwell

Over 140,000 people attended the Cleveland Automobile Show, Jan. 17 to 25, and very few of them missed the featured Aeronautic Exhibit sponsored by Cleveland Chapter N.A.A.

The Navy Department loaned a standard torpedo and a Wright Typhoon Motor, or T2, which latter was absolutely staggering to those visitors accustomed to that smaller Model T that crouches beneath and warms the feet of the ten million.*

View of the aeronautic section of the Cleveland Automobile Show held Jan. 17-25

The Wright Aeronautical Corp. kindly supplied a cut-out cylinder block and other parts of the Typhoon with descriptive literature, which was appreciated by men whose interest in motors has been stimulated by trying to start a Ford in cold weather.

The Air Mail loaned a large revolving beacon, and ship lights, which so impressed one old lady that she hazarded the suggestion that with all that light night-flying must be very easy and simple. We answered her that on mild nights the pilots' wives invariably flew the mails themselves so their husbands could go to the movies for some real excitement, and get away from the monotony of night-flying.

The Goodyear-Zeppelin Co., represented by C. K. Wollam and Herbert Maxson, displayed pictures, plans, parts and models which gave the public a very good idea of the construction of Zeppelins and their little brother the RS1, just produced by Goodyear. Draped in black, a photograph of the late Count Zeppelin showed visitors what a pleasant, kindly-faced old genius had conceived the world's most interesting form of long distance transportation, and the remarks of the crowd proved that Count Zeppelin's politics died with him and are forgotten while the great work he did lives after him to remind us that he contributed to humanity's knowledge, which is good, and that he was probably a fine old sport, which is even better.

The Glenn L. Martin Co. contributed models of Martin Bombers, photographs of ships, and many parts of the new Navy Torpedo and Bombing Planes now under construction. All parts carried explanatory photographs so the public would know just what went where, if not why it went where it went.

Aerial Surveys, Inc., exhibited aerial photographs of interest and NEA Feature Service showed how the newspapers use the airplane for rapid delivery of pictures. Leece-Neville Co. displayed generators used by the Air Mail, and Floyd J. Logan exhibited war surplus material used by everybody else.

Herbert Buckman, Manager of the Auto Show, reminded the writer of the days when we had worked together as mechanics in the Bicycle Show held in 1897 at Madison Square Garden, where a horseless carriage was exhibited for the first time, and was sold to P. T. Barnum for his circus. That was twenty-eight years ago, when horse-cars dashed madly across New York to the danger of life and limb. In another twenty-eight years, when airplanes blot out the sun and every child has his own light plane, when the battleships are hauled overland to Kansas to save them from the enemy, and when AVIATION prints one joke each week to brighten up the ads.—then we shall have an Airplane Show and will exhibit as a curio one of the things men flew in 1925.

*For the benefit of our readers in Nepaul and Bhutan we wish to add that our correspondent is referring to the Ford car.—EDITOR.

New Commercial Plane

The Racer Aircraft Co. of Perth Amboy, N. J., recently produced for Barney Coleman of that city a two-seater monoplane fitted with a 90 hp. 10 cyl. Anzani engine which is illustrated herewith. The machine was designed by F. R. Seasock, who expects to put it in production together with a sport plane fitted with a 3 cyl. 35 hp. Anzani engine.

As will be seen from the illustration, Mr. Coleman's machine is a strut braced monoplane with a cabin. The fuselage is built of plywood longerons and plywood bulkheads to the front of the pilot's cockpit, and plywood corner ties to the rear. The longerons are of spruce spliced at the rear of the cockpit. The cabin is upholstered with blue velvetine and has a door at the top between the wings and a trap door with glass window in the floor for aerial photography.

The wings are of conventional construction, having I beams of chanelled spruce and ribs of birch plywood with spruce capstrips, and the usual lightening holes. From leading edge to the front spar the wing is covered with plywood, the rest with grade A linen, doped with Dupont clear nitrate dope and Valsparred. The wings are attached to the top of the cabin by means of four steel tube struts which are cross braced by wires. The ailerons control wires are run through the wing, with inspection doors at the pulleys. Ailerons are of the overhang type.

The tail unit is also built of wood. The stabilizer is attached to the fuselage at the rear by a steel plate and at the front by the beam extending into the body, somewhat in the fashion of the Oriole. It is braced by steel tubes. The fin is built into the fuselage.

Two-seater commercial plane (90 hp. Anzani), built by the Racer Aircraft Co. of Perth Amboy, N. J.

The power plant consists of a 10 cyl. Anzani engine which turns a propeller 8 ft. 2 in. in diameter with a 7 ft. 1 in. pitch at 1400-1450 r.p.m. in the air.

The machine was tested by Lieut. Elliott Underhill, formerly of the Marine Corps, at Seasock Flying Field, near Perth Amboy, on Nov. 30, 1924. The performances obtained are given below.

SPECIFICATIONS

Span	36 ft.	Weight empty	790 lb.
Length	23 ft. 9 in.	Weight loaded	1360 lb.
Height	7 ft. 3 in.	Max. speed	90-95 mi. /hr.
Chord	62 in.	Cruis. speed	75 mi. /hr.
Aerofoil	U.S.A. 27.	Landing speed	30 mi. /hr.
Incidence	2½ deg.	Wing loading	7.84 lb. /sq. ft.
Wing area	174 sq. ft.	Power loading	15.1 lb. /hp.

Approximate initial climb: 850-950 ft. /min.

Peoria News

During the past year interest in flying around Peoria, Ill., has grown considerably. AmRhein Bros. opened a new flying field about 10 mi. west of the city a few months ago. They are flying a JN4D with OXX6 motor, mostly for barnstorming, with a few exhibition and advertising flights. AmRhein is a graduate of the Varney Flying School of this city.

Two of the planes returning from the Dayton Races looked so good to our local fliers that they were not able to get away after they once landed at the Varney Airport north of the city. One of the ships, a Hisso Standard, was purchased by Leslie Gingerich, who is also a graduate of the Varney School. The other ship, an Avro, was purchased by Edward Leiningar, of Steamboat Springs, Colo., who is in Peoria to learn to fly.

During the summer the Varney Aircraft Co., who have been operating here for a number of years, completely reorganized, with the result that they now have a lot of new equipment and are operating on a larger scale than heretofore. They are operating their winter flying school, as usual, this winter with great success. This is the third winter in succession that they have operated their winter flying school.

Fliers who have visited Peoria in the past will be pleased to learn that the Varney Aircraft Co., have added twenty acres of land to their flying field, at the north of the city, which now makes it an exceptionally good field. Gas, oil and supplies are kept on hand. Visiting fliers are always welcome.

Fliers around Peoria hope to see the Winslow bill defeated because they feel that aviation is still in the stage of development where it needs freedom. If Peoria is any index to flying conditions throughout the country the next year is going to be a big year for commercial fliers.

Ft. Worth News

By Geo. F. Bischof

A number of men interested in aviation recently met at the shop of the Bischof Auto Repair Co. in Fort Worth, Tex., and organized the Fort Worth Flying Club to meet Thursday evenings for an hours discussion, and the chance of meeting others interested. The club brought together a surprising number of old time pilots holding positions in the city, who had taken flying instruction at one of the three flying fields located here during the war.

Officers elected at the meeting were J. D. Buie, president; Geo. McConnell, vice president; and Geo. F. Bischof, secretary-treasurer. An effort may be made to build the Club into a larger organization so as to bring to the city any advantages in the flying business that may turn up.

The opinion here as elsewhere seems to breathe of something stirring in aviation in the near future. Fort Worth has seen so much of flying during the war that the chances are we will be a little slow here in our enthusiasm as elsewhere, but it is the writer's opinion that the city which steps forward to provide means of landing and encouraging flying near the city from now on will have an advantage over the city which does not provide something. Fort Worth has spent some money and has a municipal field, but it seems too far out.

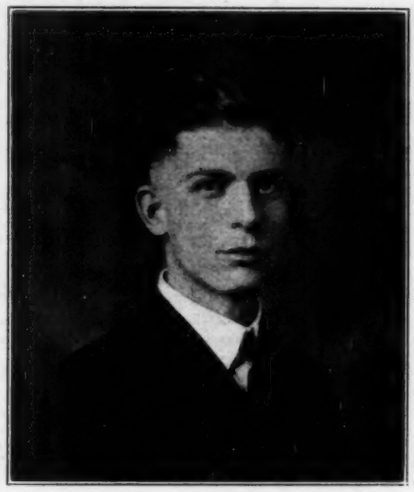
The old time war material in this part of the state is just about all gone and it won't be later than next fall before factories will have to be looked to for deliveries. At one field here an average of four planes can be seen flying away each day, leaving for different parts of the United States, some going to Mexico.

The stage of passenger carrying for the sake of novelty seems about passed, and the next stage will be something worth while. Probably crowds of four or five will be leaving for some national event or to visit relatives in another state instead of motoring into another county. The same seating capacity required of the automobile would therefore seem necessary for the commercial plane to come.

The N.A.A. local chapter has had a fair start, but it has been sleeping since. Its President, Amon G. Carter, was instrumental in getting most of the members to start with. The announcement has been made that an election of officers will be held shortly so that the organization may get busy again.

The Swallow factory had two demonstrators here with planes for the past two weeks, giving quite a few flights to prospectors. Louisiana is their next destination.

Sam Kaufman of Bowie, Tex., flew in for a visit in a remodeled outfit, which looked like a Canuck from a distance. The seating compartments were enclosed cleverly, making it a nice looking and comfortable job.



Lloyd Stearman, chief engineer of the newly formed Travel Air, Inc., of Wichita

The New Wichita Aircraft Builders

The new commercial aircraft manufacturing firm which has been formed in Wichita, Kan., as was reported in our issue of Jan. 26, last, has been incorporated under the name of Travel Air, Inc. Those actively and financially interested in the new firm are Walter H. Beech, Walter Innes, jr., Clyde Cessna and Lloyd Stearman. For the time being the mailing address of the new firm is Post Office Box 151, Wichita, Kan.

Mr. Stearman, who sprang to sudden fame last year as the designer of the New Swallow commercial plane, is the chief engineer of Travel Air, Inc.

Details of the light commercial three-seater equipped with an OX5 engine which the firm will bring out before long will be described in an early issue of AVIATION. A five-place cabin ship is also under construction.

In the meantime the following particulars of the three-seater will be of interest. The machine is a tractor biplane of very clean lines. The upper wing measures 33 ft. in span and 5 ft. 6 in. in chord; the lower wing 28 ft. in span and 4 ft. 6 in. in chord. The wings, which are set a strong positive stagger, have a total area of 295 sq. ft. The gap is 4 ft. 8 in. The overall length is 23 ft. 6 in. and the maximum height of the ship 8 ft. 6 in. The weight, light, is 1200 lb. and the weight, loaded, 1950 lb., giving a useful load of 750 lb. The power loading, with the 90 hp. Curtiss OX5 engine, is 21.6 lb./hp. and the wing loading 6.6 lb./sq. ft.

Landing Field at Decatur, Ga.

Decatur, Ga., now has an aviation field which ranks among the finest in that part of the country, according to a recent issue of the Atlanta *Constitution*. Two Decatur citizens, E. F. Tuggle and Frank Wickersham, both engaged in the automobile business, have furnished the field and put it in condition. Both have planes of their own and it was, of course, primarily for their own convenience that they planned the field, but they have offered its use freely and gladly to all visiting aviators and, if needed, to the city itself as an aviation field. Both of these men are enthusiastic fliers and spend all the time they can spare from business soaring high above their home city in their own planes.

The field which these two airmen prepared is about 75 acres in extent. It has two take-offs, one running north and south and the other east and west. Each runway is about 1200 ft. long, and both are as smooth and perfect as they can be. Scrapers, drags and heavy rollers were used to make them wide, straight and smooth. The field is exactly one mile northeast of the Courthouse Square in Decatur. At the end of the field is a wooden hangar where the two machines (Curtiss biplanes) are housed.

There is a considerable drop at the hopping off end of the field which aids the flier in getting into the air. There is ample space in the neighborhood of the field if a flier should miss his bearings, but the field is so well marked that there is no excuse for any flier who does not come down smoothly and in the right place.

For the convenience of visiting aviators there is a telephone at the southwest end of the field, and just one mile away in Decatur there is always an ample supply of high test gasoline suitable for use in aviation motors.

LIGHT PLANES AND GLIDERS

Edited by Edmund T. Allen

For a North American Light Plane Club

By Edmund T. Allen

There are in America a very great number of aeronautical people interested primarily in light planes to whom some sort of organization centered about this common interest would be welcome. These people do not know each other, although they often reside in the same community; they do not know how many such there are because there are no common means for communication. This is felt very strongly from the increasing number of letters that come to AVIATION from pilots, from young experimenters, from amateur builders, mechanics, designers, engineers, motor designers, school groups, etc. They all need some center for the distribution of information, for obtaining assistance in problems of construction, for sympathetic encouragement in amateur projects, and for voicing their desires regarding regulation and the maintenance of a consistent vision in growth. We therefore suggest the formation of The North American Light Plane Club, and we solicit expression of sentiments from everyone who is interested as to its organization, functions, scope and program.

In order to facilitate somewhat the formulation of these ideas, the Light Plane Department of AVIATION proposes the following plan. Suggestions from the readers will be integrated into a corpus that will form the basis for the organization of the Club.

Why North American?

Why not? North America, for flying people, is aeronautically a unit to be knit together by the light plane interests. As a flying community, California, on account of the mountains, is as far away from Illinois, say, as Mexico, and the Lakes are the only Canadian barrier. For the light plane is essentially a cross-country ship; borders are artificial in aviation. The enforced aeronautical isolation of the smaller countries of Europe is one of the greatest difficulties which air traffic has to meet. Light planes interests are not political; they are geographical. People working with light planes, wherever they live, are the same sort of people, and they might well be knit together in the same Club. The airmen who served in the War will welcome association with Canadian airmen, those who were not of U.S.A. and between whom no one could tell the difference anyway (except for the use of the American dialect). We are the same people with the same needs; and, essentially, our light plane development will be parallel.

What is true of the North is, in this particular, true also of the South. Mexico, we may discover, has pilots, and many potential light plane pilots who are the same sort of people as we are. And if we learn Spanish for some other reason than a possible future commercial exploitation we may not seem quite so impossible socially as international aviators as *we* once were when we tried to explain to a Mexican flight commander why we had hopped so far across the border without a passport. We know too little about Mexican aviation. There are some very interesting Mexican ships with new radial motors. (Perhaps they could develop for us a good light plane motor.) We know nothing about Mexican pilots, and almost as little about Mexico as a country. They know little about us. If we are to insist upon isolation, let it be continental isolation not insular.

Why a Club?

We need a body to give voice to the desires of amateur builders, pilots and small factories, who are going to build and fly the light planes of the future. Such a body alone could cooperate with the National Aeronautic Association in guiding light plane development. It is needed to formulate the ideas that will be expressed by the various local groups about regulations and competitions. By means of the organization the local groups may exchange ideas, plans, materials, help, and even pilots, and it will foster flying between groups, encourage acquaintance with the people and the work of the group, and function in building up a body of competent aviators.

This Club might organize competitions between local groups or sections of the country. In fact the Club might be merely a loose federation of *local* light plane Clubs, and its function merely the keeping in touch with the activities of the local groups.

The Local Unit

The local unit might be the strong body of such an organization. It is here that the work of development will be done. The actual design of new machines, the building and testing of better and better machines with smaller and smaller motors. These units might be formed anywhere, with two men or with twenty, and groups formed at schools will have many excellent facilities for the study of design and for the construction of machines. We may bear in mind that in five or six years there may be thousands of people at light plane work in North America. There may by that time be nearly a million pilots, and the great body of these may perhaps be trained by the light plane local groups.

Just now we suggest that those who see something in this idea get together with their friends, talk the matter over, and communicate with AVIATION. We would like to communicate with all the locals of the National Aeronautical Association, asking for their suggestions; and with all aeronautical periodicals and aeronautical bodies. Out of such a vast store of experience there might arise a North American Light Plane Club that will really serve the need that many feel.

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE

The Dedication of Ford Field, Mich.

By Tech. Sgt. X. L. Horn, A.S.

Henry Ford saw his first Aerial Circus on Jan. 15 last, when a flight of Curtiss Pursuit ships, piloted by Maj. T. G. Lanphier, Commanding Officer of Selfridge Field, Lieutenants Hurd, Johnson, Bettis, Lyons, Mathews, Minty, Rich and Warner and Staff Sergeants Wasser, Manning and Wiseley, also a DeHavilland plane piloted by Lieutenant Whitehead with Eddie Stinson as passenger and a "Jenny," piloted by Lieutenant Ellis, with William Mara of the Detroit Board of Commerce as passenger, visited him at Ford Field, Dearborn, Mich., and were his guests at a luncheon.

"That's wonderful; I never saw anything like it before," the host remarked after the thrilling performance had been concluded and the fast pursuit ships had started into the mist on the return trip to Selfridge Field, Mich.

The visit was in the nature of a dedication of the new field, which was opened several months ago but on which no Army fliers had ever landed. It was also in the nature of an introduction of Army and Commercial aviation and of Army pilots to those in civil life who are vitally interested in the welfare and future of air commerce.

Harvey S. Firestone, Ford's intimate friend; William B. Mayo, his chief engineer; Ernest G. Kanzier, Second Vice President of the Ford Motor Co.; W. H. Smith, Ford Research Engineer; William J. Cameron, Editor of the *Dearborn Independent;* William B. Stout, Stanley E. Knauss, George Prudden and George Hoppin, all of the Stout Metal Airplane Co. located on the field, were the other guests at the luncheon served in the dining room just back of the new experimental laboratory at Dearborn.

After the luncheon the Army fliers, Ford and his guests inspected the Stout Metal Airplane factory where quantity production of the Stout Air Pullman type of all-metal plane is in progress. At the luncheon the conversation was decidedly in the air. It was pointed out to Mr. Ford and his guests that the total number of fighting pursuit ships now available for the defense of the United States is regrettably small. In discussing the standing of the United States in aircraft, Ford was told that other countries have hundreds of such ships as those with which the First Pursuit Group is now supplied.

"I know," he said, "but the brains are over here and they are all working." And who is there to deny him.

One of the Curtiss ships was equipped with skis, exciting much curiosity and discussion. During the luncheon Mr. Ford turned to Mr. Firestone, who was seated near him, and laughingly remarked: "Well, Harvey, these wooden skis are going to hurt your business unless you think up a formula for a hard rubber one." Which facetiousness caused Mr. Planck, of the Detroit *Free Press,* to remark somewhat later on after an expansive sigh, "Well, Mrs. Ford certainly is a good cook."

Mr. Ford proved a very congenial and entertaining host and insisted upon having his picture taken with the "Generals," as he called the visiting pilots. "You see," said Mr. Ford, "I don't understand all those little funny things you wear on your shoulders and collars, so by calling all army men General and all Navy men Admiral, I am forgiven."

Mr. Ford is deeply interested in aviation, both civil and military, and has extended a personal invitation to all Army pilots to land on his field at any time.

The building of Ford Field was but a matter of days. It is said that Mr. Ford with his chief engineer, Mr. Mayo, were one day looking over the ground when Mr. Ford suddenly remarked: "Well, Mayo, we'll have an aviation field here next week." There was. The next day men, tractors, graders and other necessary machinery were hard at work, and within a week the whole field was practically completed. The field is smooth and large enough to accommodate any type of ship and its facilities are excellent.

Aviation, both civil and military, belongs to the same great family and it is essential that between the two there be created an *esprit de corps,* unbreakable and lasting through the ages. Flights like this will do much to establish this *esprit de corps* by impressing upon a rather thoughtless public the dire need for the best and the greatest air service in the world.—*Air Service News Letter.*

General Callan Visits Langley Field

Gen. Robert E. Callan, Commanding General of the Third Coast Artillery District and Commandant of the Coast Artillery School, Fortress Monroe, Va., experienced his first airship and airplane rides on the occasion of his visit to Langley Field, Va., on Jan. 5.

A luncheon given in his honor at the Officers' Club was attended by the following officers: Maj. James A. Mars, from the Office Chief of Air Service; Maj. O. Westover, Commanding Officer; Maj. Benj. B. Warriner, Post Surgeon; Maj. T. DeW. Milling, Assistant Commandant, A.S.T.S.; Maj. Earl L. Naiden, Senior Instructor, Air Service Tactical School; Capt. Wm. O. Butler, Commanding Officer, 19th Airship Company; Capt. F. E. Galloway, 50th Squadron; and Capt. Paul J. Mathis, Post Adjutant.

After luncheon General Callan was escorted to the flying field, where an aerial review was presented at 1:30 p. m. in his honor. The types of planes participating in this review were Martin Bombers, DeHavilands, SE5A's and Thomas Morse Pursuit ships. There were a total of thirty-three planes, consisting of twelve Martin Bombers, three Thomas Morse pursuit planes, thirteen DeHavilands and five SE5A's.

Activities of San Antonio A.I.D.

The Engineering Department of the San Antonio Air Intermediate Depot, Kelly Field, Texas, under the direction of 1st Lieut. Clements McMullen, completely overhauled and repaired the following airplanes and airplane engines during the month of November: Airplanes—eight DH4B, seven DH4M1, eight SE5E, four JN6H1, one DH4B1, one DH4B3, one Vought VE9, one MB3A, one DH4BP1; Engines—thirty-eight Liberty -12A, twenty-three Wright-E, five Wright-1, two Wright A2.

During the month of December, 1924, 37 airplanes and 70 engines were overhauled and repaired, as follows: Airplanes—8 DH4's, 1 DH4B3, 9 DH4M's, 7 JN6H1's, 7 SE5E's, 1 TA6 and 1 TW3; Engines—44 Liberty-A's, 11 Wright-E's, 13 Wright-L's and 2 Wright-A-2's.

During the calendar year 1924 there were overhauled and repaired at the San Antonio Depot a total of 363 airplanes and 701 engines, as follows: Airplanes—141 DH4B, 11 DH4B1, 7 DH4B3, 2 GA1, 70 JN6H1, 5 DH4BP1, 16 JN-6HA2, 5 JN6HE, 19 SE5E, 27 MB3A, 15 MB3M, 36 DH-4M1, 3 NBS1, 1 TA6, 1 DH4B4, 2 TW3, 1 VE9, 1 CO4; Engines—359 Liberty-A, 72 Wright-A2, 138 Wright-1, 81 Wright-E, 27 Wright-H, 20 Wright-H3, 4 Wright-L4.

Franco-American Courtesies

Arrangements have just been completed with the French Air authorities which will permit the American Assistant Military Attaché at Paris to fly French government airplanes. As a reciprocal courtesy the French Air Attaché at Washington will be permitted to fly American planes at Bolling Field. This agreement will allow the American officer in Paris to become familiar with the operation of French airplanes.

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WRITE FOR INFORMATION

Publisher's News Letter

So much is happening in aviation circles which ought to be fully covered in a weekly publication aiming to give its readers a record of the times that this letter to our readers is in the nature of an explanation. As we have said before, one of the difficulties which confronts a weekly publication is the selection of news that will probably still be news when the paper reaches its subscribers. An excellent illustration of this editorial predicament is before us now. Aeronautical news appears on the front page of almost every newspaper every day. And each day brings a shifting of the scenes. To look ahead a week or two and guess what will be news then is frankly hopeless. If you will put yourself back a week or ten days before you read this, you will help in understanding our problems.

* * * *

General Mitchell is again the storm center of a controversy the intensity of which can only be compared to the Sampson-Schley dispute or the Jellicoe-Beatty discussion. The difference in this case, as with Admiral Sims' so-called indiscretions, is that General Mitchell has once again caught the public ear with his claims for aircraft and, in a most sensational manner, shaken the whole organization of our national defense. His possible demotion for outspoken criticism, his challenge to the Navy, his attack on War Department conservatism, as well as his championship of a United Air Force, have all stirred Congress and the country to demand some authoritative answer to these questions. To predict or even surmise what will happen a week hence would require the quality of prophecy that only seers possess.

* * * *

A particularly keen observer has outlined the situation in a way airmen will readily grasp. He likened the warlike controversy in Washington to a carefully planned attack by an army and navy on an independent air force under a resourceful and daring leader. The Generals and Admirals had planned their campaign along approved and tested lines. The Secretary of the Navy opened the battle with his big guns supported by the President. Then the lesser naval forces came into action, with the military ready to occupy the captured positions. It was all according to precedent and tradition. But suddenly the air force went into action with gas bombs against the capitol and the civil population, as well as laying a smoke screen before the enemy. As quickly as would happen in war, the civilians were terrified and the well planned attack of the surface forces was hopelessly groping in a fog of enveloping publicity. The naval and military forces protested against the flank movement as being contrary to all precedent and regulations, but the more they protested, the faster the gas bombs of publicity were let loose from the airmen. The outcome of the struggle cannot be foretold. Airmen claim that a sudden aerial attack may settle the wars of the future. It is just possible that even though there may be casualties in high places, the surprise attack may have so startled the civilian population that the military and naval forces will be called back.

* * * *

To translate this warlike portrayal into plain language, the situation at this time seems to be developing into a nationwide demand for a national air policy. General Mitchell has, completely ignoring the consequences to himself and his career, stated the airman's point of view so forcefully that the country is awaiting the reply of the bureaucratic conservatives with an attitude of mind that is demanding convincing refutation of the statements made regarding the power of aircraft. Coming, as it will have to, after the revelation that $433,000,000 has been spent on government aviation in five years and with $82,000,000 to be spent on aircraft carriers, there will have to be marshalled defensive proofs that will be overwhelmingly convincing. The naval forces, through ill-informed leadership, have been placed in a very difficult position. With Secretary Wilbur's positive assertion that a 2,000 pound bomb would not even "jam the turrets" of a battleship and his further claim "We know it will not," that it has been tried and that such a statement is "absolutely untenable and ridiculous" the Navy is placed in an untenable position. Photographs now in existence disprove this assertion conclusively. The public has seen them and will place the burden of actual demonstration on the Navy.

* * * *

Then the conflicting statements given out by the Navy concerning the bombing of the battleship Washington will require more explaining. The Navy gave to the press the impression that "no less than 30,000 pounds of explosives were dropped on her" and that "six naval planes, each carrying a single 1600 shell" would attack the battleship. Now it appears that "no bombs of any description had been released from airplanes in flight on the incompleted man-of-war." Such conflicting assertions will have to be satisfactorily explained. The report of the General Board of the Navy will undoubtedly restate the naval utility of aircraft but with the above two instances in mind the public will be incredulous.

* * * *

Whether General Mitchell is demoted, court marshalled or reprimanded, is beside the point of the matter. The public will not be satisfied with any course except that aircraft proponents either be given a fair chance to prove their claims or that the older services permit aviation to play a more important role in our national defense. President Coolidge can be relied on to take a broad view of this controversy and may settle it in his own way, possibly as President Roosevelt settled the Admiral Sims' assertions.—L.D.G.

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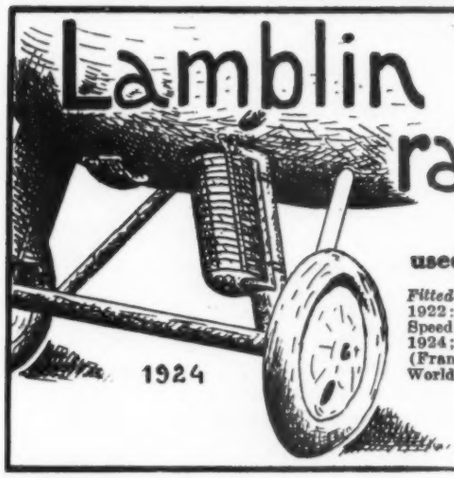

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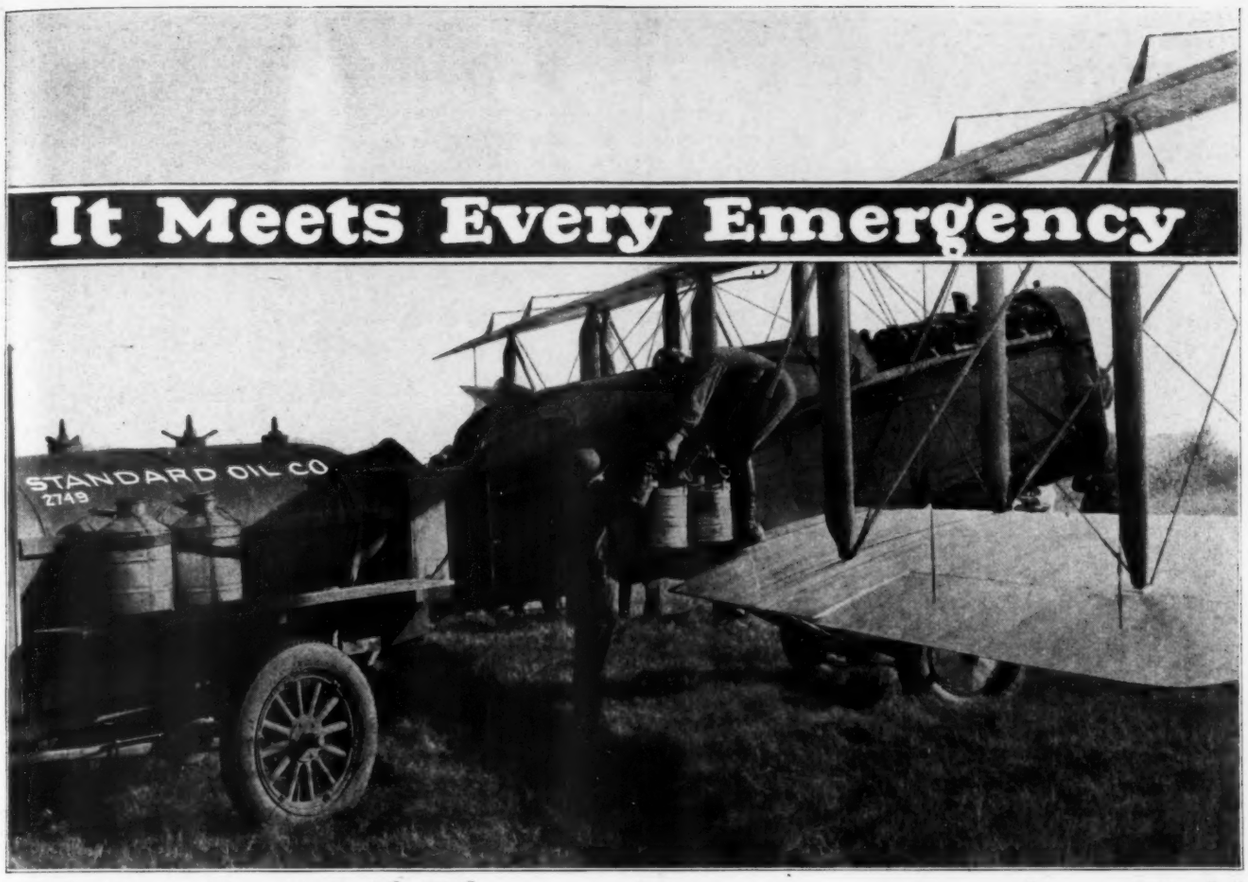

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